

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

In the present patent application, Claims 40-46, 48-50, and 52-54 are presently active. Claims 41-45, and 49 were withdrawn in response to the October 7, 2009 Restriction Requirement. Claims 1-39 were cancelled by previous amendments. The present Amendment amends independent Claims 40 and 48 without introducing any new matter, nor raising new issues that would require further search and/or consideration, and cancels Claims 47 and 51 without prejudice or disclaimer.

The January 22, 2010 Office Action rejected Claims 40, 46-47, 48, and 50-52 under 35 U.S.C. § 103(a) as unpatentable over Bach (U.S. Patent No. 4,861,163) in view of Elabd (U.S. Patent No. 5,760,403).

In response to the withdrawal of Claims 41-45 and 49 as being directed to non-elected species, in case independent Claim 40 would be held allowable, and the features of independent Claim 40 do not conflict with the features of dependent Claims 41-45 and 49, Applicant respectfully requests rejoinder of these claims to the active listing of claims.

Applicant's independent Claim 40 is amended to recite that the apparatus has a frontal plane with a pinhole. Independent Claim 48 is amended to recite an analogous feature. These features find non-limiting support in Applicant's disclosure as originally filed, for example at page 10, lines 10-15.

Moreover, new Claims 53-54 are added. New Claims 53 and 54 depend from independent Claims 40 and 48, respectively, and recite that the waves of a first kind are not passed through a lens. These features find non-limiting support in Applicant's specification at page 10. No new matter has been added.

In response to the rejection of Claims 40, 46-47, 48, and 50-52 under 35 U.S.C. §

103(a), in light of the presentation of new claims, this rejection is now moot. Applicant therefore respectfully requests reconsideration of this rejection, as discussed next.

Briefly summarizing, Applicant's independent Claim 40 is directed to a method for forming and picking up an image by using an apparatus having a frontal plane with an pinhole, an intermediate plane, and a two-dimensional image pick-up device. The method includes the steps of forming a first undistorted image of an object by waves of a first kind through the pinhole of the frontal plane onto a front surface of the intermediate plane, converting the first undistorted image of the object to waves of a second kind emitting from the rear surface of the intermediate plane, the intermediate plane acting as a wave converter from the waves of the first kind to the waves of the second kind, the waves of the second kind detectable by the two-dimensional image pick-up device, forming a second distorted image by waves of a second kind onto an image sensor of the two-dimensional image pick-up device, and outputting a corrected image of the object by the two-dimensional image pick-up device, by using information of the first undistorted image and second distorted image for distortion calibration.

As explained in Applicant's specification with non-limiting examples, the features of Applicant's independent Claim 40 allow to form a geometrically undistorted two-dimensional image onto an intermediate plane, that at the same time acts as a wave converter, for example to transform image forming waves or corpuscular rays into second waves or corpuscular rays that can be detected by an image sensor. (See specification, p. 15, ll. 3-18.) For this specific purpose of generating an undistorted image, the light is passed through an opening that can be a pinhole of a frontal plane, instead of a lens system comparing to conventional cameras. (See specification, p. 10, ll. 17-19.) Therefore, the features of Applicant's independent Claim 40 provides for a simple and inexpensive system to detect waves, and provide for an inexpensive calibration system to obtain undistorted images. Please note that this discussion is provided

for explanatory purposes only, and is not intended to limit the scope in any fashion.

Turning now to the applied references, Bach is directed to an apparatus for fluorescence radiation detection formed of a ellipsoidal cylinder 12 having a first focal line 14, a second focal line 16, with an internal wall 18 of the ellipsoidal cylinder 12 having a reflective inner surface. (Bach, Abstract, Figs 1-2, col. 2, ll. 60-68.) Bach explains that the radiation source may be a laser source 22 emitting a laser beam based through a lens 23 onto a conical reflector 24, and the laser beam is reflected from conical reflector 24 to the reflective internal walls 18 of ellipsoidal cylinder 12, towards the second focal line 16. (Bach, col. 3, ll. 16-30, Fig. 3.) Moreover, Bach depicts a cylindrical filter 44 having a substrate 56 that can be circumferentially arranged around the second focal line 16, the filter 44 serving to generate fluorescent radiation. (Bach, col. 5, ll. 30-48, col. 2, ll. 37-40, Figs. 4-6.) However, Bach fails to teach all the features of Applicant's independent Claim 40. In particular, Bach fails to teach

forming a first undistorted image of an object by waves of a first kind through the pinhole of the frontal plane onto a front surface of the intermediate plane;

converting the first undistorted image of the object to waves of a second kind emitting from the rear surface of the intermediate plane . .

forming a second distorted image by waves of a second kind onto an image sensor of the two-dimensional image pick-up device

(Claim 40, portions omitted.) First, as can be seen in Bach's Figure 3 that the laser beam from laser source 22 is passed through a lens 23 and a reflector 24, and therefore there is no "forming [of] a first undistorted image of an object . . . onto a front surface of the intermediate plane," as required by Applicant's independent Claim 40. Bach's laser light that will impinge on the cylindrical filter 44 is clearly distorted due to optical elements 23, and 24. Second, Bach fails to teach the forming of a second distorted image by waves of a second kind onto an image sensor of the two-dimensional image pick-up device, as further required by Applicant's independent Claim 40. As discussed above, Bach's system light is reflected

inside an elliptical cylinder 12, and uses the first special point of the elliptical shape as a source point (focal line 14) of the cylinder to reflect light onto the second special point as a target (focal line 16), the target being a cylindrical filter 44 converting light into fluorescent light. (See i.e., Bach, Fig. 2, 7-9.) Accordingly, in Bach, there is no “forming a second distorted image by waves of a second kind onto an image sensor of the two-dimensional image pick-up device.” No second image can be formed in light of the geometric structure of Bach’s optical setup. Accordingly, Bach clearly fails to teach some of the features of Applicant’s independent Claim 40.

The applied reference Elabd, used by the pending Office Action to form the 35 U.S.C. § 103(a) rejection, fails to remedy the deficiencies of Bach, even if we assume that the combination is proper. Elabd is directed to a system having an x-ray source 34 that directs x-ray photons onto a target 36 with an x-ray camera 38 that captures images, where a high imaging resolution is achieved by a method of simultaneously measuring the modulation transfer functions of the X-ray and the visible images. (Elabd, Abstract.) However, just like Bach, Elabd also fails to teach a step of forming a first undistorted image of an object through the pinhole of the frontal plane onto a front surface of the intermediate plane, and a step of forming a second distorted image onto an image sensor of the two-dimensional image pick-up device, as required by Applicant’s independent Claim 40. Elabd does not have such pinhole arrangement.

Therefore, even if the combination of Bach and Elabd is assumed to be proper, the cited passages of the combination fails to teach every element of Applicant’s Claim 40. Accordingly, Applicant respectfully traverses, and requests reconsideration of this rejection based on these references.

Independent Claim 48 recites features that are analogous to the features recited in independent Claim 40, but directed to an apparatus. Accordingly, for the reasons stated

above for the patentability of Claim 40, Applicant respectfully submits that the rejections of Claim 48, and the rejections of all associated dependent claims, are also believed to be overcome in view of the arguments regarding independent Claim 40.

The present amendment is submitted in accordance with the provisions of 37 C.F.R. §1.116, which after a final rejection permits entry of amendments placing the claims in better form for consideration on appeal. As the present amendment is believed to overcome outstanding rejections under 35 U.S.C. § 103(a), the present amendment places the application in better form for consideration on appeal. In addition, the present amendments to independent Claims 40 and 48 are of a minor nature. It is therefore respectfully requested that 37 C.F.R. § 1.116 be liberally construed, and that the present amendment be entered.

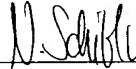
Should the Examiner continue to disagree with the above distinctions, Applicants respectfully request that the Examiner provide an explanation via Advisory Action pursuant to M.P.E.P. § 714.13 specifically rebutting the points raised herein for purposes of facilitating the continued prosecution.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 40-46, 48-50, and 52 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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